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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,480	06/23/2003	Michael L. Brundage	MSFT-1744/303845.1	1383

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EXAMINER	
GORTAYO, DANGELINO N	
ART UNIT	**PAPER NUMBER**
2168	

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/601,480 -	BRUNDAGE ET AL.	
	Examiner	Art Unit	
	Dangelino N. Gortayo	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/23/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/23/03 10/1/03*. 3/16/05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

1. Claims 1-16 are pending.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Mention of the method of optimization using an intermediate language representation and tagging is suggested.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kiernan et al. ("Kiernan" US # 6,934,712 B2).

As per claim 1, Kiernan discloses "A method for constructing an optimal representation for an input query" (see Abstract)

"receiving the input query, wherein the input query is an intermediate language representation comprising nodes, each node having a respective node type;" (column 3 lines 53-61 wherein input query transformed into a language-neutral intermediate representation is received and is equivalent).

"examining the nodes in a left-depth first manner to identify node types for optimization;" (column 6 lines 33-44 wherein the intermediate representation is examined in a bottom-up manner, which is equivalent to a left-depth first manner).

"tagging nodes corresponding to the identified node types;" (column 7 lines 52-64 wherein node operations are tagged from the intermediate representation).

"moving upward to the next node until the intermediate language representation of the input query has been examined in its entirety;" (column 9 lines 40-50 wherein the tagger goes through all the nodes, as represented by a tagger parse tree, to completion).

"searching from the top of the intermediate language representation for tagged nodes and identifying associated code patterns to be optimized;" (column 10 lines 6-31 wherein the intermediate representation inputs data and returns tagged node operations).

"and adjusting the identified code patterns with improved code patterns to form an optimal representation for the input query" (column 14 lines 47-60 wherein the intermediate representation is rewritten to an equivalent form for optimization).

As per claim 2, Kiernan discloses "the receiving step comprises receiving a semantic intermediate language representation." (column 5 lines 57-63 wherein an intermediate representation received is a sequence of parameterized operations ad is analogous to a semantic intermediate language representation).

As per claim 3, Kiernan discloses "the semantic representation comprises a graph structure containing nodes." (Figure 6 and column 6 lines 45-54 wherein the intermediate representation comprises a graph structure showing node operations).

As per claim 4, Kiernan discloses "the improved code patterns are generated using one or more translations comprising at least one of constant folding, logical rewrites, path rewrites, loop-invariant code rewrites, tuple rewrites, position rewrites, commutations, in mining and sort elimination." (column 7 lines 7-18 wherein the translation provides nesting rewrites and general rewriting of operations, which is equivalent to position and logical rewrites).

As per claim 5, Kiernan discloses "A computer-readable medium having computer-executable instructions for performing a method for constructing an optimal representation for an input query," (see Abstract and column 4 lines 41-53)

"receiving the input query, wherein the input query is an intermediate language representation containing code patterns and nodes, each node having a respective

node type;" ;" (column 3 lines 53-61 wherein input query transformed into a language-neutral intermediate representation is received including code patterns inherent in queries).

"examining the nodes in a left-depth first manner to identify code patterns and node types which are subjects for optimization;" (column 13 lines 43-64 wherein the tagger operators utilize a number of functions to evaluate the query using code patterns).

"tagging the identified code patterns until the intermediate language representation of the input query has been examined in its entirety;" (column 13 lines 28-42 wherein results from the query are examined in its entirety and compared to identified code patterns).

"searching from the top of the intermediate language representation for tagged code patterns;" (column 14 lines 19-29 wherein the tagger searches from the top and moves through the data using a "next" method to search for identified code patterns).

"and adjusting the tagged code patterns with improved code patterns to form an optimal representation for an input query." (column 14 line 61 – column 15 line 5 wherein the tagger uses an algorithm to receive SQL queries which is the optimal representation of the input queries).

As per claim 6, Kiernan discloses "A computer system for generating an optimized representation of an input query" (see Abstract)

"an input device for receiving an input query;" (column 3 lines 53-57 wherein a server receives the input queries).

"one or more intermediate language compilers wherein an intermediate language representation containing nodes is generated from the input query;" (column 4 line 66 – column 5 line 4 wherein the parser converts an XML query into a language-neutral intermediate representation and is analogous).

"and an optimizer performing the acts of" (column 4 line 64 – column 5 line 11 wherein the parser, the rewrite engine, and the translator make up an optimizer to process input queries).

"receiving the input query, wherein the input query is an intermediate language representation comprising nodes, each node having a respective node type;" (column 3 lines 53-61 wherein input query transformed into a language-neutral intermediate representation is received and is equivalent).

"examining the nodes in a left-depth first manner to identify node types for optimization;" (column 6 lines 33-44 wherein the intermediate representation is examined in a bottom-up manner, which is equivalent to a left-depth first manner).

"tagging nodes corresponding to the identified node types;" (column 7 lines 52-64 wherein node operations are tagged from the intermediate representation).

"moving upward to the next node until the intermediate language representation of the input query has been examined in its entirety;" (column 9

lines 40-50 wherein the tagger goes through all the nodes, as represented by a tagger parse tree, to completion).

"searching from the top of the intermediate language representation for tagged nodes and identifying associated code patterns to be optimized;" (column 10 lines 6-31 wherein the intermediate representation inputs data and returns tagged node operations).

"and adjusting the identified code patterns with improved code patterns to form an optimal representation for the input query." (column 14 lines 47-60 wherein the intermediate representation is rewritten to an equivalent form for optimization).

As per claim 7, Kiernan discloses "containing a post-optimization processing portion forming query results," (column 5 lines 12-16 wherein the SQL queries are executed and the query results are generated after optimization).

"one or more target generators wherein the optimal representation is transformed into one or more target representations forming a target query;" (column 7 lines 32-45 wherein the intermediate representation is transformed into SQL queries).

"one or more data sources for querying over;" (column 4 lines 9-23 wherein a server contains the database to be queried).

"and one or more execution engines wherein the target query is executed over the one or more data sources to produce the query results." (column 12 lines 32-46 wherein the SQL queries are executed over the data sources for query results).

As per claim 8, Kiernan discloses "A computer system for generating an optimized representation of an XML intermediate language representation of one or more of input queries"

"one or more of input devices for receiving the one or more input queries;" (column 3 lines 53-57 wherein a server receives the input queries).

"one or more intermediate language compilers wherein each compiler generates an intermediate language representation of an input query;" (column 4 line 66 – column 5 line 4 wherein the parser converts an XML query into a language-neutral intermediate representation and is analogous).

"an expression accumulator which combines each intermediate language representation into a single XML intermediate language representation;" (column 4 line 60 – column 5 line 16 wherein the parser converts an XML query into a language-neutral intermediate representation and the intermediate language representation is passed through a rewrite engine and a translator for a representation to construct using XML elements).

"and an optimizer performing the acts of:" (column 4 line 64 – column 5 line 11 wherein the parser, the rewrite engine, and the translator make up an optimizer to process input queries).

"receiving the input query, wherein the input query is an intermediate language representation containing code patterns and nodes, each node having a respective node type;" ;" (column 3 lines 53-61 wherein input query

transformed into a language-neutral intermediate representation is received including code patterns inherent in queries).

"examining the nodes in a left-depth first manner to identify code patterns and node types which are subjects for optimization;" (column 13 lines 43-64 wherein the tagger operators utilize a number of functions to evaluate the query using code patterns).

"tagging the identified code patterns until the intermediate language representation of the input query has been examined in its entirety;" (column 13 lines 28-42 wherein results from the query are examined in its entirety and compared to identified code patterns).

"searching from the top of the intermediate language representation for tagged code patterns;" (column 14 lines 19-29 wherein the tagger searches from the top and moves through the data using a "next" method to search for identified code patterns).

"and adjusting the tagged code patterns with improved code patterns to form an optimal representation for an input query." (column 14 line 61 – column 15 line 5 wherein the tagger uses an algorithm to receive SQL queries which is the optimal representation of the input queries).

As per claim 9, Kiernan discloses "the one or more input queries comprise one or more of an XML query and an XML view." (column 2 lines 35-45 wherein the input queries are XML queries to examine data in the default view, which is in XML).

As per claim 10, Kiernan discloses ""containing a post-optimization process portion forming query results," (column 5 lines 12-16 wherein the SQL queries are executed and the query results are generated after optimization).

"one or more target generators wherein the optimal representation is transformed into one or more target representations forming target queries;" (column 7 lines 32-45 wherein the intermediate representation is transformed into SQL queries).

"one or more data sources for querying over;" (column 4 lines 9-23 wherein a server contains the database to be queried).

"and one or more execution engines wherein the target queries are executed over the one or more data sources to produce the query results." (column 12 lines 32-46 wherein the SQL queries are executed over the data sources for query results).

As per claim 11, Kiernan discloses "A method for constructing an optimal representation for an input query" (see Abstract)

"receiving the input query, wherein the input query is an intermediate language representation containing nodes, each node having a respective node type;" (column 3 lines 53-61 wherein input query transformed into a language-neutral intermediate representation is received and is equivalent).

"examining the nodes to inspect code patterns associated with respective node types;" (column 13 lines 43-64 wherein the tagger operators utilize a number of functions to evaluate the query using code patterns).

"comparing the inspected code patterns using a pattern match algorithm to detect non-optimized code patterns;" (column 14 lines 3-18 wherein an algorithm is used for pattern matching to find relevant code)

"and adjusting one or more of the non-optimized code patterns and the inspected code patterns with improved code patterns to form an optimal representation for an input query." (column 14 line 61 – column 15 line 5 wherein the tagger uses an algorithm to receive SQL queries which is the optimal representation of the input queries).

As per claim 12, Kiernan discloses "the receiving step comprises receiving a semantic intermediate language representation." (column 5 lines 57-63 wherein an intermediate representation received is a sequence of parameterized operations ad is analogous to a semantic intermediate language representation).

As per claim 13, Kiernan discloses "the semantic representation comprises a graph structure containing nodes." (Figure 6 and column 6 lines 45-54 wherein the intermediate representation comprises a graph structure showing node operations).

As per claim 14, Kiernan discloses "the improved code patterns are generated using one or more translations comprising at least one of constant folding, logical rewrites, path rewrites, loop-invariant code rewrites, tuple rewrites, position rewrites, commutations, in mining and sort elimination." (column 7 lines 7-18 wherein the translation provides nesting rewrites and general rewriting of operations, which is equivalent to position and logical rewrites).

As per claim 15, Kiernan discloses "A computer-readable medium having computer-executable instructions for performing a method for constructing an optimal representation for an input query," (see Abstract and column 4 lines 41-53)

"receiving the input query, wherein the input query is an intermediate language representation containing nodes, each node having a respective node type;" (column 3 lines 53-61 wherein input query transformed into a language-neutral intermediate representation is received and is equivalent).

"examining the nodes to inspect code patterns associated with respective node types;" (column 13 lines 43-64 wherein the tagger operators utilize a number of functions to evaluate the query using code patterns).

"comparing the inspected code patterns using a pattern match algorithm to detect non-optimized code patterns;" (column 14 lines 3-18 wherein an algorithm is used for pattern matching to find relevant code)

"and adjusting one or more of the non-optimized code patterns and the inspected code patterns with improved code patterns to form an optimal representation for an input query." (column 14 line 61 – column 15 line 5 wherein the tagger uses an algorithm to receive SQL queries which is the optimal representation of the input queries).

As per claim 16, Kiernan discloses "A computer system for generating an optimized representation of an XML intermediate language representation of one or more of input queries"

"one or more of input devices for receiving the one or more input queries;" (column 3 lines 53-57 wherein a server or servers receive input queries).

"one or more intermediate language compilers wherein each compiler generates an intermediate language representation of an input query;" (column 4 line 66 – column 5 line 4 wherein the parser converts an XML query into a language-neutral intermediate representation and is analogous).

"an expression accumulator which combines each intermediate language representation into a single XML intermediate language representation;" (column 4 line 60 – column 5 line 16 wherein the parser converts an XML query into a language-neutral intermediate representation and the intermediate language representation is passed through a rewrite engine and a translator for a representation to construct using XML elements).

"and an optimizer performing the acts of:" (column 4 line 64 – column 5 line 11 wherein the parser, the rewrite engine, and the translator make up an optimizer to process input queries).

"receiving the input query, wherein the input query is an intermediate language representation containing nodes, each node having a respective node type;" (column 3 lines 53-61 wherein input query transformed into a language-neutral intermediate representation is received and is equivalent).

"examining the nodes to inspect code patterns associated with respective node types;" (column 13 lines 43-64 wherein the tagger operators utilize a number of functions to evaluate the query using code patterns).

"comparing the inspected code patterns using a pattern match algorithm to detect non-optimized code patterns;" (column 14 lines 3-18 wherein an algorithm is used for pattern matching to find relevant code)

"and adjusting one or more of the non-optimized code patterns and the inspected code patterns with improved code patterns to form an optimal representation for an input query." (column 14 line 61 – column 15 line 5 wherein the tagger uses an algorithm to receive SQL queries which is the optimal representation of the input queries).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lin et al. (US # 6,526,403 B1)

Mani et al. (US # 6,654,734 B1)

Couch et al. (US # 6,725,212 B2)

Bestgen et al. (US # 6,915,290 B2)

Carey et al. (US # 6,006,214)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dangelino N. Gortayo whose telephone number is (571)272-7204. The examiner can normally be reached on M-F 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin can be reached on (571)272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dangelino N. Gortayo
Examiner